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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/659,269

09/11/2003

Emi Takuma

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7590

09/22/2004

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EXAMINER

MARTIR, LILYBETT

ART UNIT

PAPER NUMBER

2855

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/659,269

Applicant(s)

TAKUMA, EMI

Examiner

Lilybett Martir

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/11/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- In claims 1 and 2 the recitations of "mounted on a column side" and "on column sides" are unclear since no column has been defined, and the examiner cannot determine what position said recitations intend to define relative to the side of any existing and previously defined element.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Wan et al. (Pat. 6,707,293).

- With respect to claim 1 Wan et al. teaches a magnet 106 rotating in synchronization with a steering shaft 108 (Col. 2, lines 49-51) mounted on a vehicle; and a magnetic sensor 102 mounted on a side, the magnetic

sensor configured to detect a rotation angle of the steering shaft by sensing a change of a magnetic field emitted from the magnet, wherein the magnet has S and N poles arranged on a plane of which normal line is in a substantially axial direction of the steering shaft as noted in Figure 1; and the magnetic sensor 102 is disposed such that a sensing direction thereof is set to be a substantially single direction and the sensing direction is made to substantially coincide with the axial direction of the steering shaft (Col.2, lines 52-64).

- With respect to claim 3 Wan et al. teaches the magnetic sensor 102 being provided on a position where a component of the magnetic field from the magnet in the axial direction of the steering shaft is detectable (Col. 2, lines 52-64).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2,4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zabler et al. (Pat. 5,930,905) in view of Wan et al. (Pat. 6,707,293) and further in view of Niki et al. (Pat. 6,404,084).

- With respect to claim 2 Zabler teaches a first gear 11 rotating in synchronization with a steering shaft L mounted on a vehicle; a second gear 12 rotating in synchronization with the first gear at a speed faster

than a speed of the first gear; a third gear 13 rotating in synchronization with the first gear; magnets 20 and 21 rotating in synchronization with the second and third gears, respectively; magnetic sensors 22 and 23 provided in vicinities of the magnets of the second and third gears as noted in Figure 2b, respectively, the magnetic sensors configured to sense changes of magnetic fields from the magnets of the second and third gears (Col. 5, lines 23-42); and a computation unit 24 configured to compute a rotation angle of the steering shaft by detecting rotation angles of the second and third gears based on sensing signals from the magnetic sensors (Col. 5, lines 39-42), wherein each of the magnets 20 and 21 provided on the second and third gears has S and N poles arranged on a plane (Col. 5, lines 27-30) and each of the magnetic sensors 22 and 23 are disposed such that a sensing direction thereof is set to be a substantially single direction and the sensing direction is made to substantially coincide with the axial direction of the steering shaft L as noted in Figure 2b. Zabler et al. fails to teach the third gear rotating at a speed slower than a speed of the second gear and each of the magnets provided on the second and third gears and the magnet having S and N poles arranged on a plane of which normal is in a substantially axial direction of the steering shaft. Wan et al. teaches a magnet 106 rotating in synchronization with a steering shaft 108 (Col. 2, lines 49-51) mounted on a vehicle; and a magnetic sensor 102 mounted on a side, the magnetic sensor configured to detect a rotation angle of the steering shaft by

sensing a change of a magnetic field emitted from the magnet, wherein the magnet has S and N poles arranged on a plane of which normal line is in a substantially axial direction of the steering shaft as noted in Figure 1; and the magnetic sensor 102 is disposed such that a sensing direction thereof is set to be a substantially single direction and the sensing direction is made to substantially coincide with the axial direction of the steering shaft (Col.2, lines 52-64). Niki et al. teaches that the utilization of different gears 15,17 and 18 as the ones shown in Figure 1 for the transmission of rotational movement is commonly known in the art. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the angular measurement device of Zabler et al. utilizing the teachings of both the rotary position sensor of Wan et al. and the rotation sensor arrangement of Niki et al. by rearranging the magnet so that it has S and N poles arranged on a plane of which normal line is in a substantially axial direction of the steering shaft and modifying the size of the gear so that the second one is bigger than the third one in order to modify the rate of transmission of torque between the rotating disc to further make said device versatile, reliable and efficient.

- With respect to claim 4 Zabler teaches the magnetic sensors 22 and 23 being provided on positions where components of the magnetic fields from the magnets in the axial direction of the steering shaft are detectable as noted in Figure 2b (Col. 5, lines 24-43).

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- With respect to claim 6 Zabler teaches the utilization of a Hall sensor as expected (Col. 5, lines 44-46). Zabler fails to specifically teach the magnetic sensor is a hall IC formed of a plurality of hall elements. Niki et al. teaches the utilization of Hall IC elements H1 and H2 to measure rotation (Col. 4, lines 21-24). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the angular measurement device of Zabler et al. utilizing the teachings of both the rotary position sensor of Wan et al. and the rotation sensor arrangement of Niki et al. by utilizing a more accurate detector such as a Hall IC to further improve the accuracy of the device and therefore it's reliability.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable Wan et al. (Pat. 6,707,293) in view of Niki et al. (Pat. 6,404,084).

- With respect to claim 5 Wan et al. teaches the utilization of a Hall sensor 102. Wan et al. fails to specifically teach the magnetic sensor is a hall IC formed of a plurality of hall elements. Niki et al. teaches the utilization of Hall IC elements H1 and H2 to measure rotation (Col. 4, lines 21-24). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the teachings of the rotary position sensor of Wan et al. utilizing the teachings of the rotation sensor arrangement of Niki et al. by utilizing a more accurate detector such as a Hall IC to further improve the accuracy of the device and therefore it's reliability.

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**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilybett Martir whose telephone number is (571)272-2182. The examiner can normally be reached on 9:00 AM to 5:30 PM.

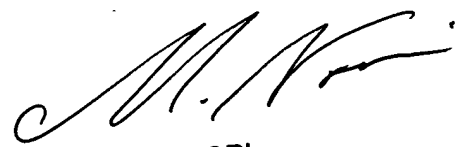
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571)272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CM

Lilybett Martir  
Examiner  
Art Unit 2855

LCM

  
MAX NOORI  
PRIMARY EXAMINER